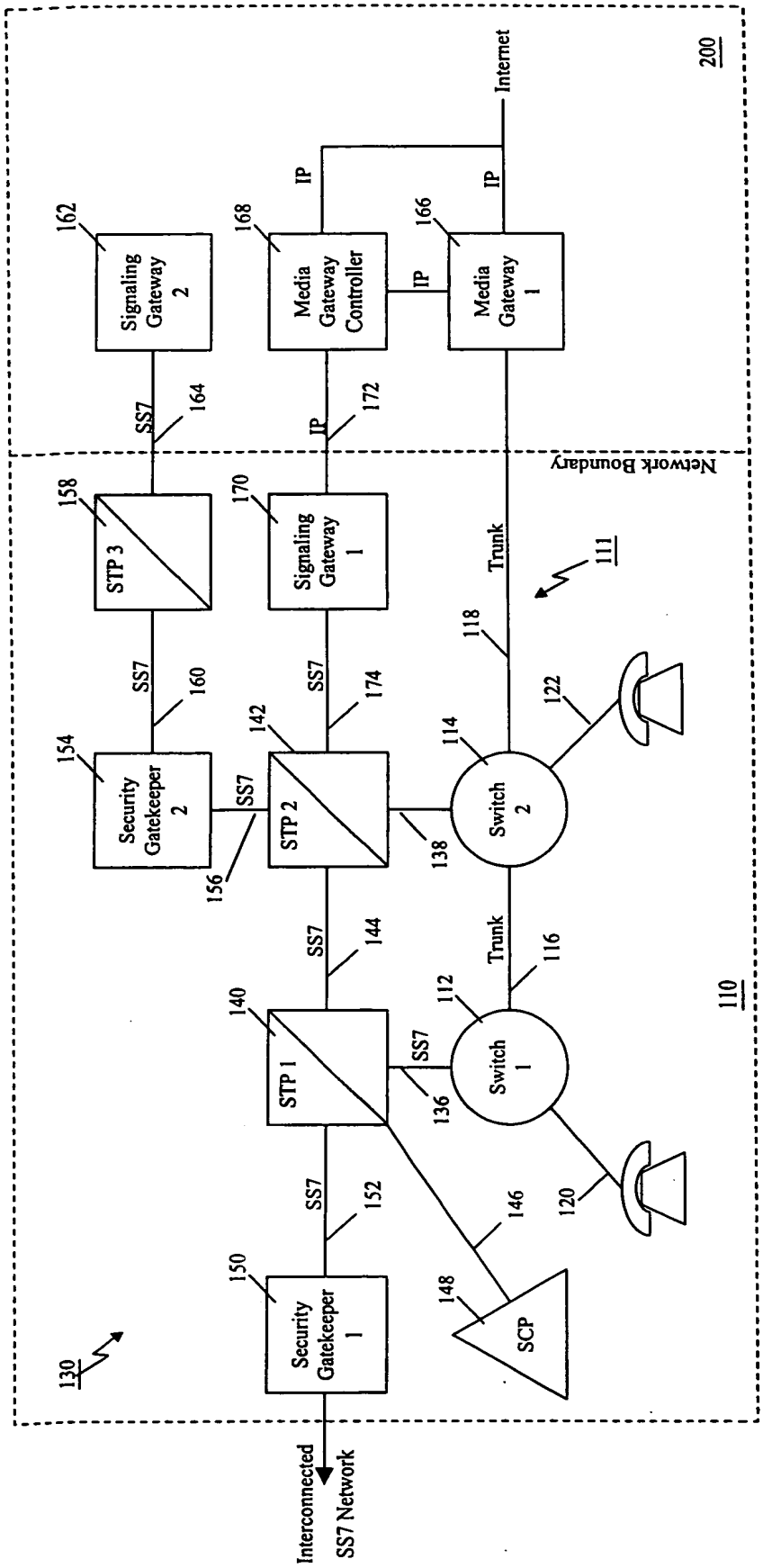


Figure 1

FOOT-22624.60

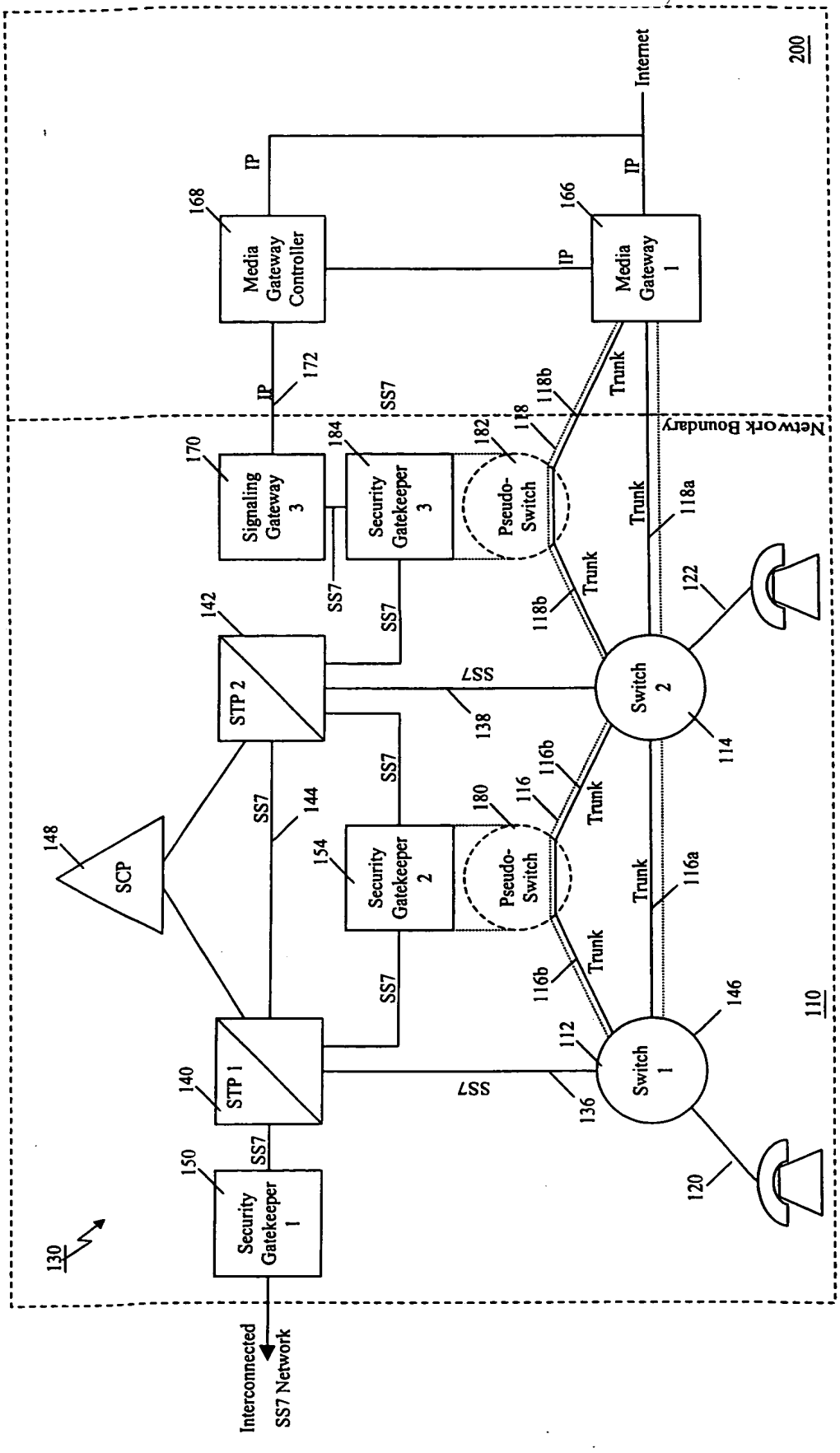

200
Internet
IP
168
Media Gateway Controller
166
Media Gateway 1
172
SS7
Network Boundary
170
Signaling Gateway 3
184
Security Gatekeeper 3
182
Pseudo-Switch
118
118b
Trunk
118a
142
STP 2
SS7
138
Switch 2
114
122
144
148
SCP
154
Security Gatekeeper 2
180
116
116b
116a
140
STP 1
136
Switch 1
112
146
110
150
Security Gatekeeper 1
130
120
Interconnected SS7 Network
100

Figure 2

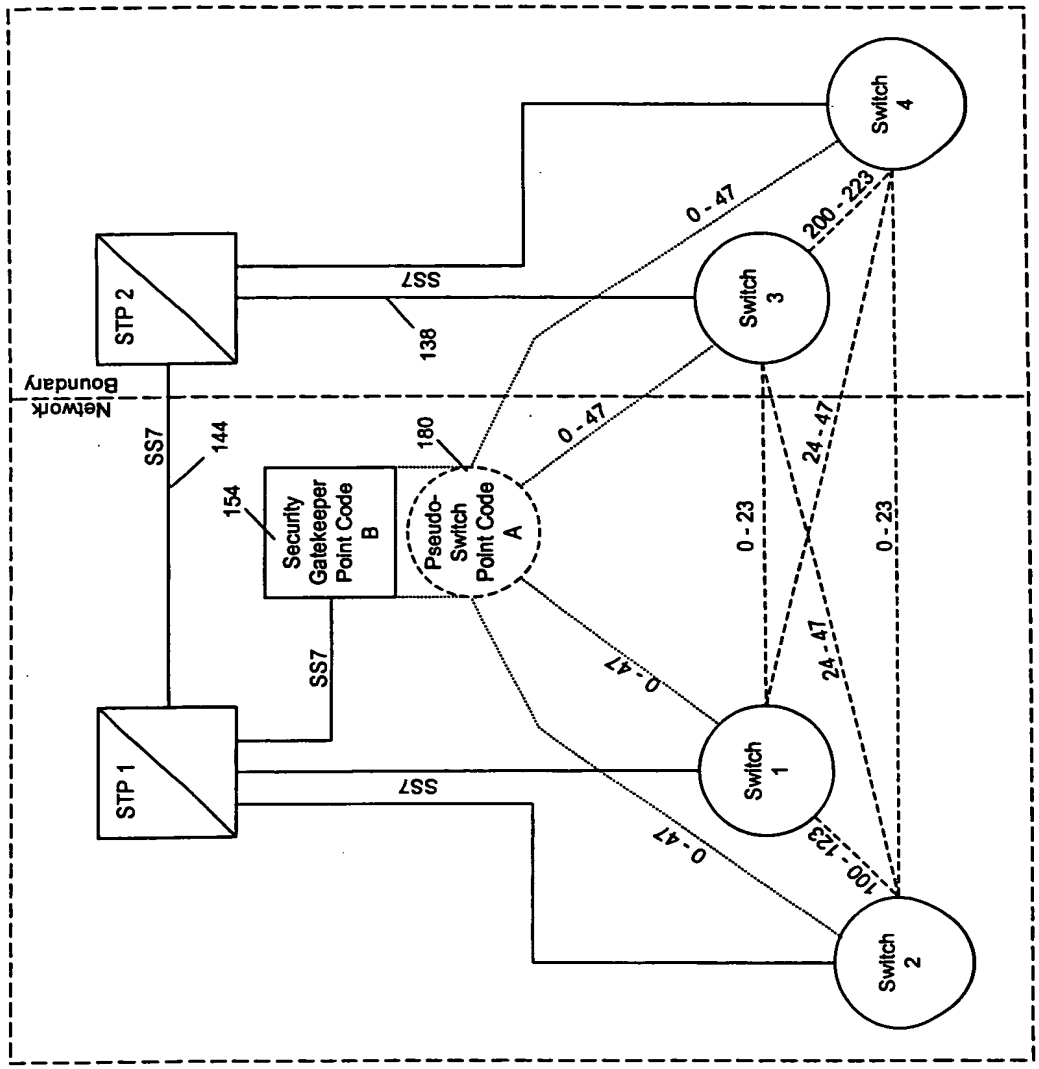

SS7 Links
Physical Trunks
Virtual Trunks
Switch 4
Switch 3
Switch 1
Switch 2
STP 2
STP 1
SS7
138
144
154
180
Security Gatekeeper Point Code B
Pseudo-Switch Point Code A
Network Boundary
0 - 47
200 - 223
24 - 47
0 - 23
100 - 123

Figure 3

EXPRESS MAIL NO. EL 840 726 260

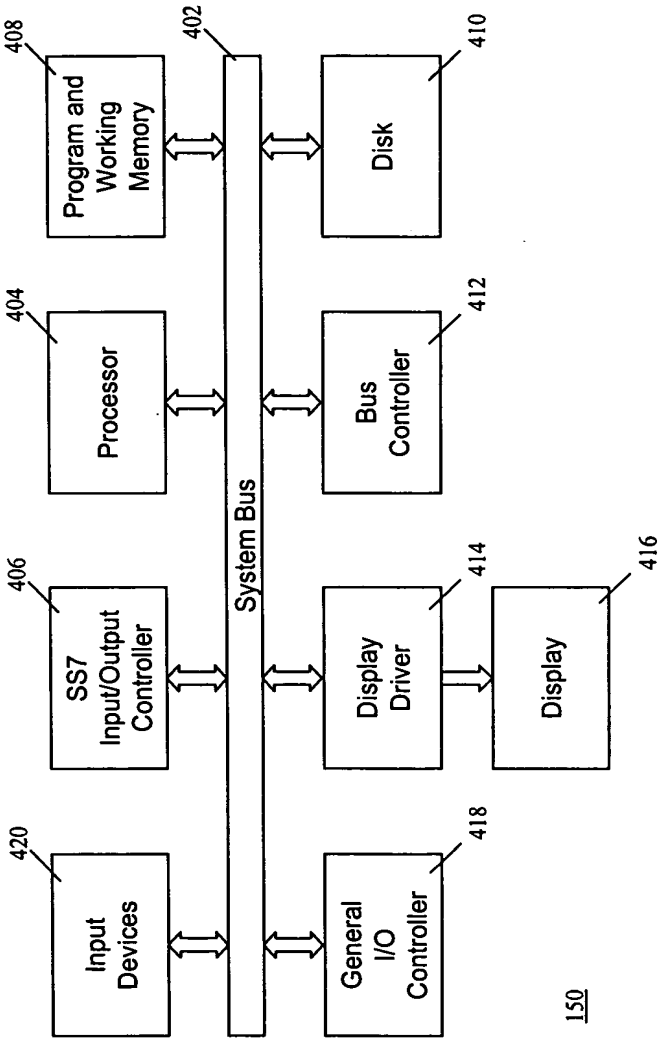
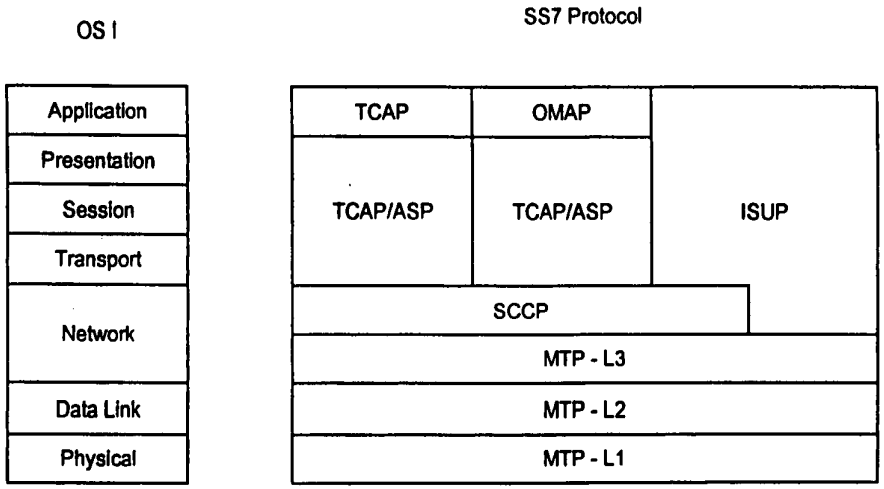


Figure 4

FOTOOT"2267B260



Legend

ASP - Application Service Part (Connection Oriented Protocols
MTP - Message Transfer Part (L1, L2 & L3)
OMAP - Operations, Maintenance, Application Part
SCCP - Signaling Connection Control Part
TCAP - Transaction Capability Application Part

Figure 5

FULBRIGHT & JAWORSKI, L.L.P.
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Inventor(s): Arthur DOSKOW, et al
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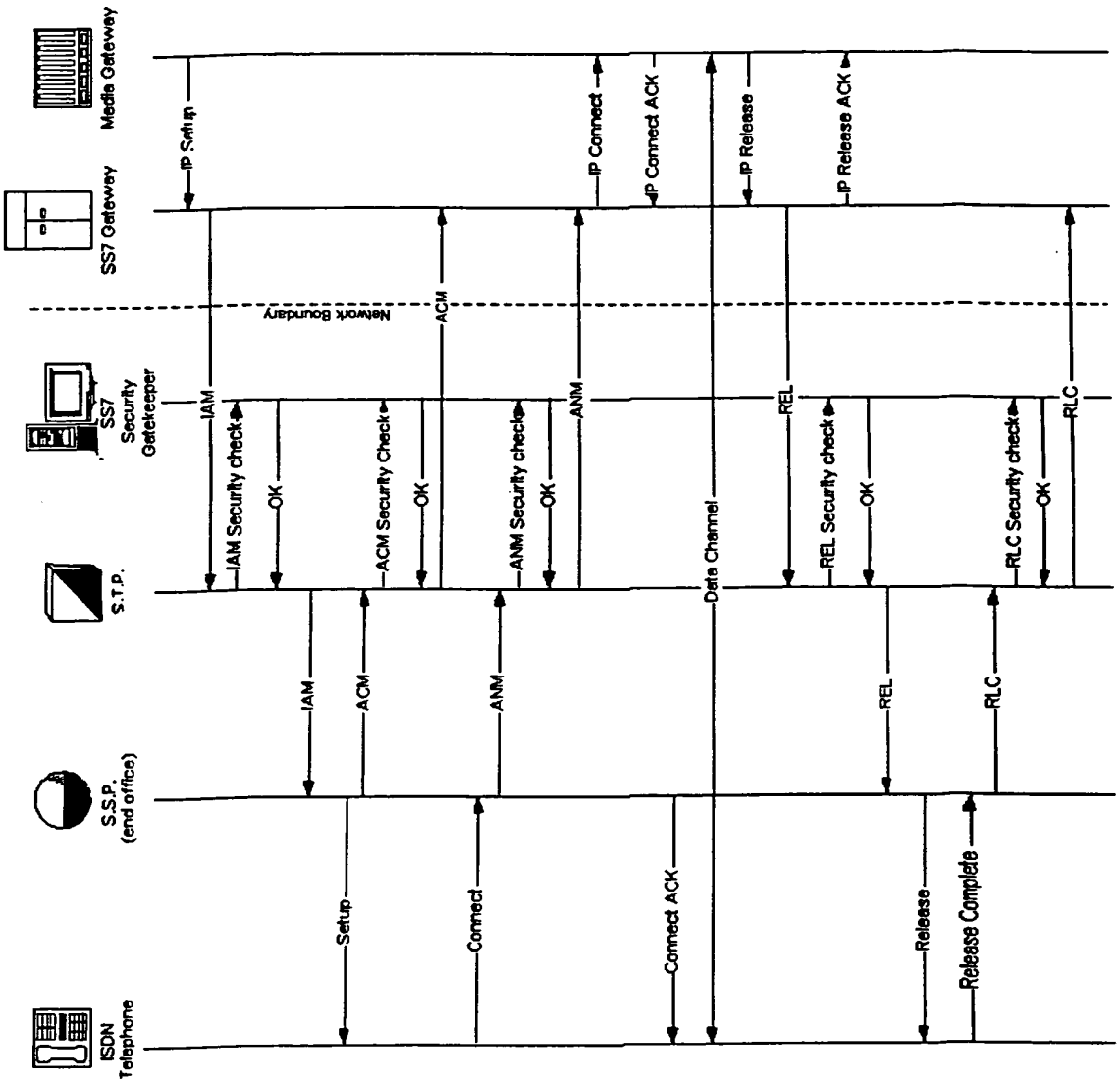
Media Gateway
SS7 Gateway
Network Boundary
SS7 Security Gatekeeper
S.T.P.
S.S.P. (end office)
ISDN Telephone
IP Setup
IP Connect
IP Connect ACK
IP Release
IP Release ACK
IAM
ACM
ANM
REL
RLC
IAM Security check
OK
ACM Security Check
OK
ANM Security check
OK
Data Channel
REL Security check
OK
RLC Security check
OK
IAM
ACM
ANM
REL
RLC
Setup
Connect
Connect ACK
Release
Release Complete

Figure 6

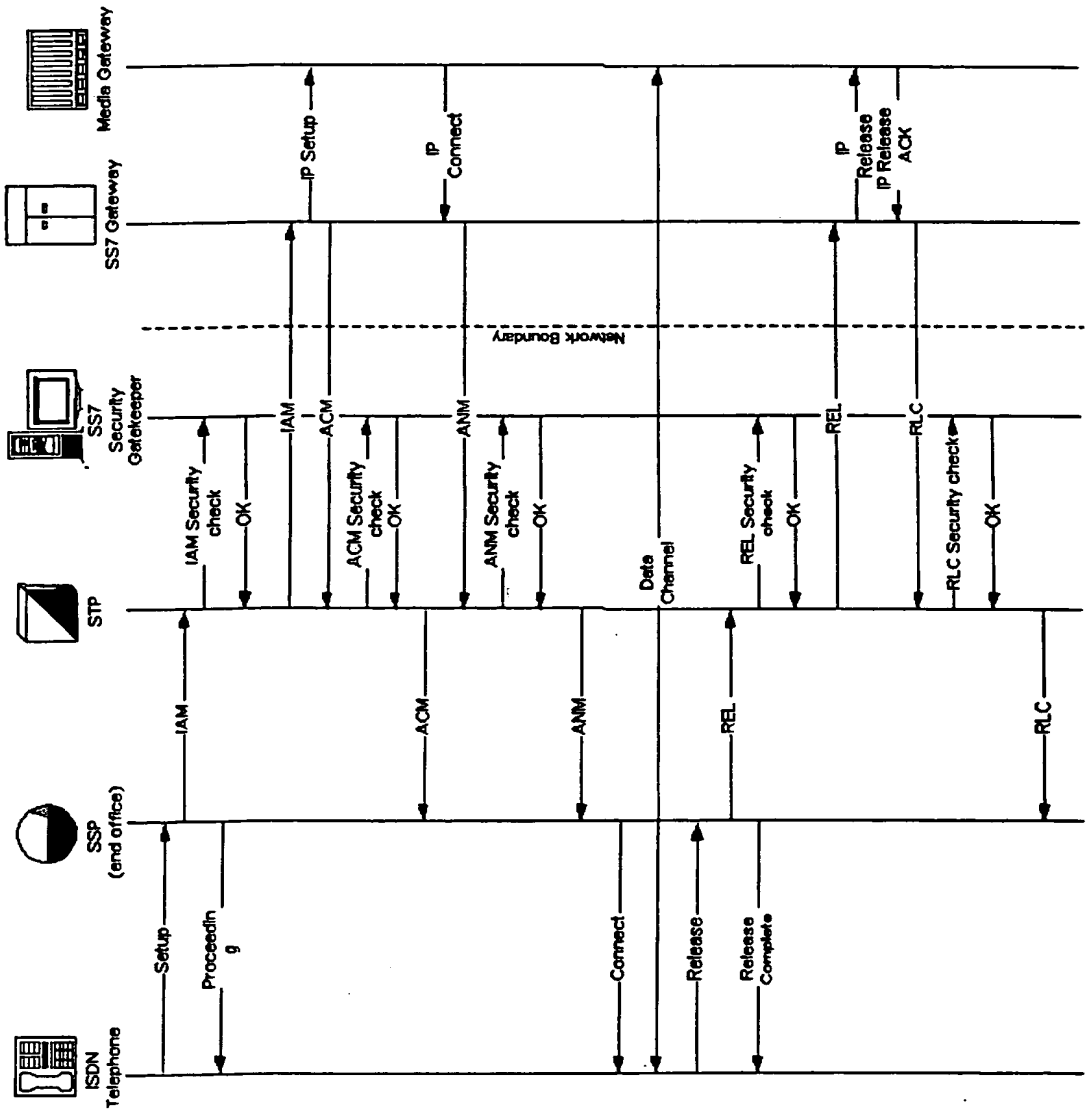
Media Gateway
SS7 Gateway
SS7 Security Gatekeeper
STP
SSP (end office)
ISDN Telephone
IP Setup
IP Connect
IP Release
IP Release ACK
Network Boundary
IAM
ACM
ANM
REL
RLC
IAM Security check
OK
ACM Security check
OK
ANM Security check
OK
Data Channel
REL Security check
OK
RLC Security check
OK
IAM
ACM
ANM
REL
RLC
Setup
Proceeding
Connect
Release
Release Complete

Figure 7

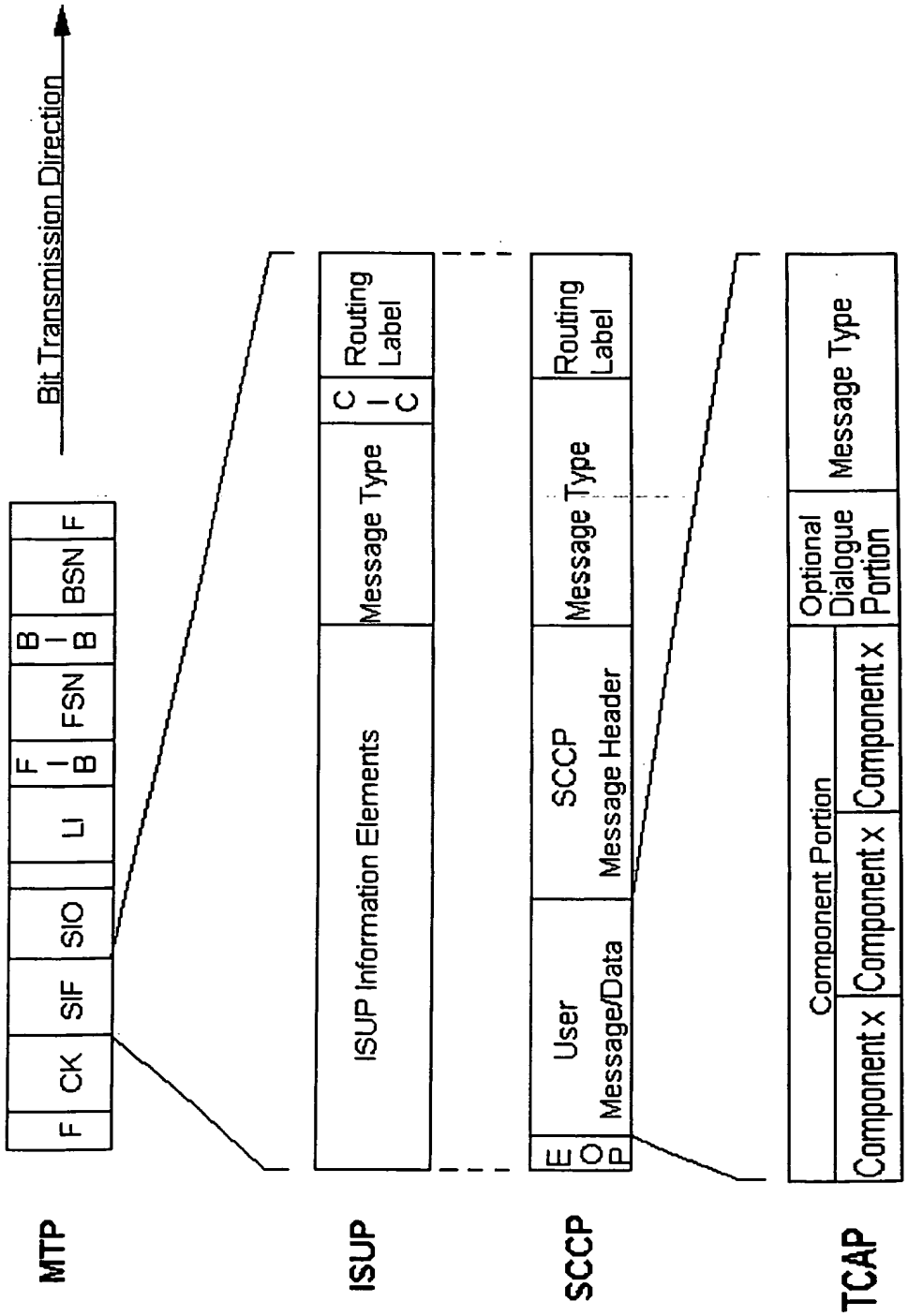
Bit Transmission Direction
F
CK
SIF
SIO
LI
F I B
FSN
B I B
BSN
F
MTP
ISUP Information Elements
Message Type
C I C
Routing Label
ISUP
E O P
User Message/Data
SCCP Message Header
Message Type
Routing Label
SCCP
Component Portion
Component x
Component x
Component x
Optional Dialogue Portion
Message Type
TCAP

Figure 8

TOTOOF "2267826O

ISDN User Part Message Format Coding
(LSSGR GR-606, Iss. 3 11/99)

		8	7	6	5	4	3	2	1
Flag	A	0	1	1	1	1	1	1	0
Forward sequence information	B	BSN/ BIB	Backward Sequence Number						
Backward Sequence information	C	FSN/ FIB	Forward Sequence Number						
Message length indicator	D	Spare		Length Indicator					
Service information	E	National Network Opt.		Mess Priority		MTP User Part (ISUP)			
Routing Label	F	Destination Point Code							
		Origination Point Code							
		Signaling Link Selection							
CIC	G	Circuit Identification Code							
Message Type	H	Message Type							
ISUP Information Element	I	ISUP Parameters							
Check Bits	J				Check Bits				

Figure 9

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FOIPOT: 2267826D

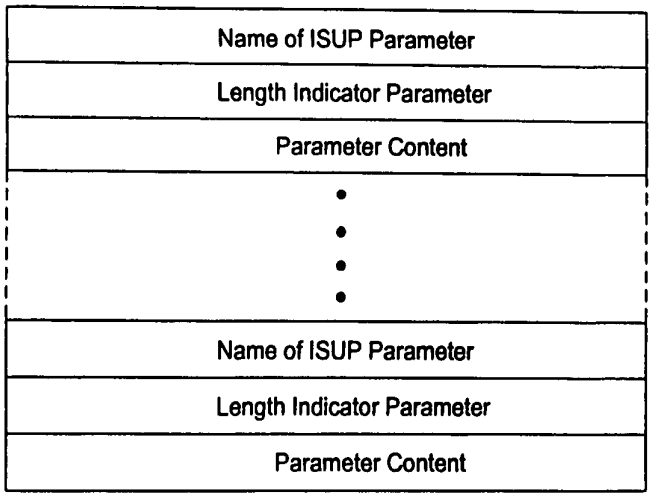

Figure 10

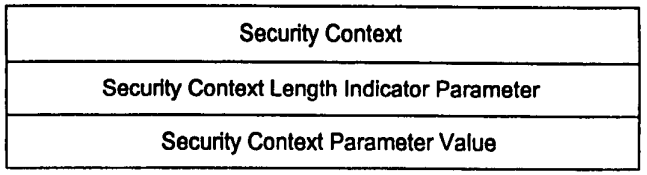

Figure 11

Security Context Values

Value	Meaning
0	Not used.
1	Data Encryption Algorithm
2	Integrity Check
3	Message Code Authentication
4	Sequence, Timestamp and Identification

Figure 12

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PATENT "2640

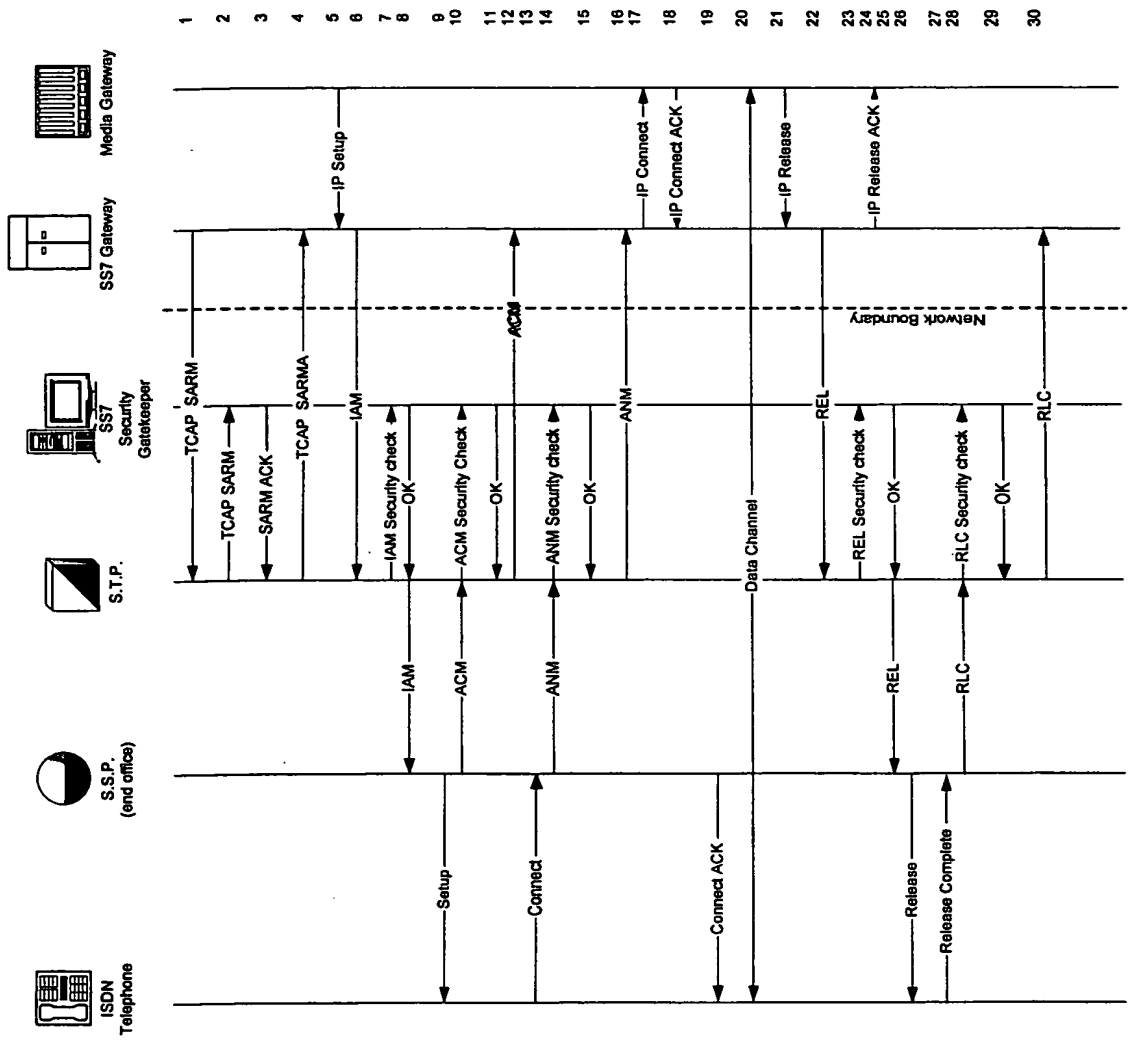

Figure 13

TECHNOLOGY CENTER 2600

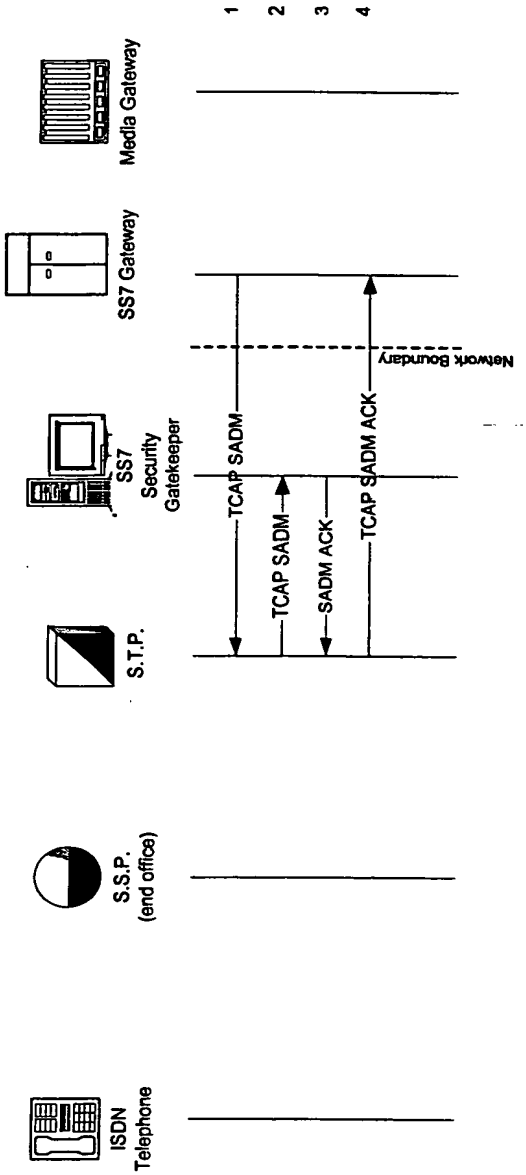

Figure 14

TOTOOT "22678260

Initial Address Message

SIO and Routing Label	
CIC Low-Order Octet	
2-bits spare	CIC High-Order 6-bits
Message Type = 1	
Nature of Connection Indicators	
Forward Call Indicator Bits H..A	
Forward Call Indicator Bits P..I	
Calling Party Category	
Offset of 1st Mandatory Var. Parameter	
Offset of 2nd Mandatory Var. Parameter	
Offset of Start of Operational Part	
Length Indicator of User Service Info	
User Service Information No. of Octets = Length Indicator Value	
Length Indicator of Called Party No.	
Called Party Number No. of Octets = Length Indicator Value	
Optional Parameter Code	
Optional Parameter Length Indicator	
Optional Parameter No. of Octets = Length Indicator Value	
End of Optional Parameters Indicator	

Fig. 15

Address Complete Message

SIO and Routing Label	
CIC Low-Order Octet	
2-bits spare	CIC High-Order 6-bits
Message Type = 6	
Backward Call Indicator Bits H..A	
Backward Call Indicator Bits P..I	
Offset to Start of Optional Part	
Optional Parameter Code	
Optional Parameter Length Indicator	
Optional Parameter No. of Octets = Length Indicator Value	
End of Optional Parameters Indicator	

Fig. 16

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TOTOOT" 2267826O

Answer Message

SIO and Routing Label	
CIC Low-Order Octet	
2-bits spare	CIC High-Order 6-bits
Message Type = 9	
Offset to Start of Optional Part	
Optional Parameter Code	
Optional Parameter Length Indicator	
Optional Parameter No. of Octets = Length Indicator Value	
End of Optional Parameters Indicator	

Fig. 17

Release Complete Message

SIO and Routing Label	
CIC Low-Order Octet	
2-bits spare	CIC High-Order 6-bits
Message Type = 16	

Fig. 19

Release Message

SIO and Routing Label	
CIC Low-Order Octet	
2-bits spare	CIC High-Order 6-bits
Message Type = 12	
Offset of 1st Mandatory Var. Parameter	
Offset of Start of Operational Part	
Length Indicator of Cause Indicators	
Release Cause Indicator Parameter No. of Octets = Length Indicator Value	
Optional Parameter Code	
Optional Parameter Length Indicator	
Optional Parameter No. of Octets = Length Indicator Value	
End of Optional Parameters Indicator	

Fig 18

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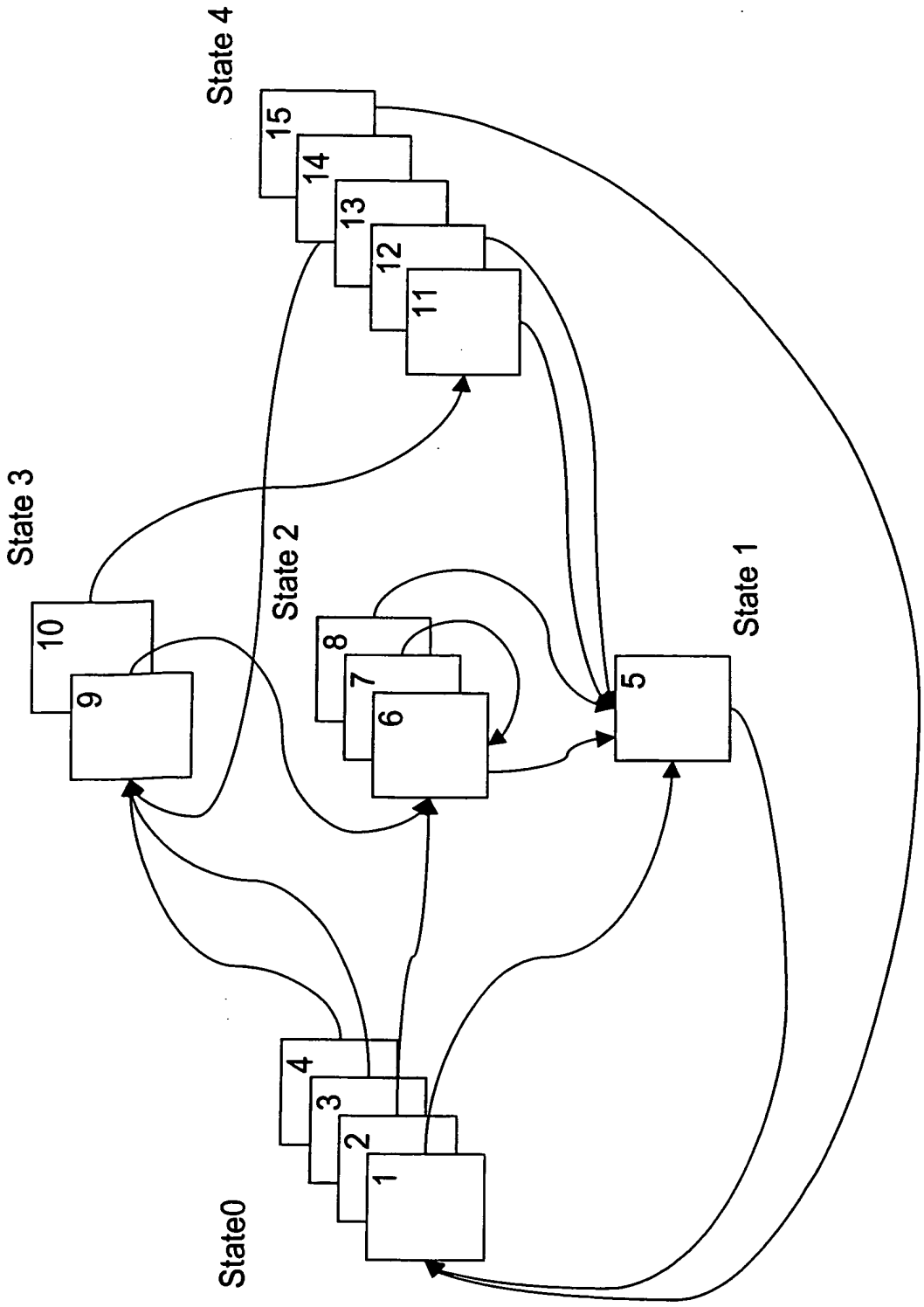

Fig. 20

"EXPRESS MAIL" 2265784650